The following is claimed:

- 1. A method for monitoring whether a subscriber station is operating in an 1 2 authorized area, the method comprising:
- 3 monitoring an operational composite fingerprint for the subscriber station;

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- comparing the operational composite fingerprint to a characteristic 5 6 composite fingerprint to determine if the subscriber station is operating within the 7 authorized area.
- 2. The method according to claim 1 further comprising, prior to the comparing 1 step, the step of defining the characteristic composite fingerprint for the
- 3 subscriber station associated with operating in the authorized area.
- 1 3. The method according to claim 2 wherein the defining step comprises
- 2 organizing a first histogram of observations of propagational delays associated
- 3 with a reverse link transmission of the subscriber station from the authorized area.
- 1 4. The method according to claim 3 wherein the defining step comprises
- 2 organizing a second histogram of antenna observations per antenna set
- 3 associated with the reverse link transmission of the subscriber station from the
- authorized area.
- 5. The method according to claim 2 wherein the defining step comprises organizing a probability density function of probability versus propagational delays
- 3 associated with a reverse link transmission of the subscriber station from the
- 4 authorized area.
- 6. The method according to claim 2 wherein the defining step comprises grouping 1
- 2 propagational delay factors based on time differences of reference pseudo-
- 3 random codes with respect to received pseudo-random codes, wherein the
- 4 subscriber station transmits on the reverse channel using the known reference
- 5 pseudo-random code.



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4 5 7. The method according to claim\1 wherein the monitoring step comprises the substeps of:

measuring a number of observations of different propagational delays within a measurement range during an uplink transmission of the subscriber station;

measuring a number of antenna observations of receive signals, of the uplink transmission, detected on each\distinct uplink antenna of a base station;

incrementing antenna set counters and counter bins associated with the corresponding observations in a first histogram of propagational delays and in a second histogram of antenna observations, respectively, to form the operational composite fingerprint for comparison to the characteristic composite fingerprint.

- 8. The method according to claim 7 wherein the monitoring step further comprises the substep of normalizing the first and segond histograms.
- 9. The method according to claim 7 wherein the monitoring step further includes the substeps of:

determining a reference range about a central propagational delay factor associated with a corresponding strongest reverse channel signal strength for the subscriber station for propagational delays observed at a beginning of the uplink transmission; and

establishing a smaller component counter and a larger component counter to track measured propagational delays that fall outside of a reference range to form the operational composite fingerprint for comparison to the characteristic composite fingerprint.

- 10. The method according to claim 7 further complising making the observations 1
- 2 based upon signal characteristics of mature finger assignments.
- 1 11. The method according to claim 7 further comprising attaining the observations
- 2 from a signal searcher.

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- 1 12. The method according to claim 1 wherein the comparing step further
- 2 comprises determining if a first histogram of measured propagational delay
- 3 factors fall within a propagational delay mask.
- 1 13. The method according to claim 12 wherein the comparing step further
- 2 comprises determining if a second\histogram of measured observations of
- 3 antenna sets falls within an antenna mask.
- 1 14. The method according to claim 1\wherein the comparing step further
- 2 comprises determining that the subscriber station is most likely operating within
- 3 the authorized area if a first histogram\of measured propagational delay factors
- 4 falls within a propagational delay mask and if a second histogram of measured
- 5 observations of antenna sets falls within an antenna mask.
- 1 15. The method according to claim 1 wherein the comparing step further
- 2 comprises determining that the subscriber station is operating in the restricted
- 3 coverage area if a first histogram of measured propagational delay factors falls
- 4 outside of a range defined by a propagational delay mask or if a second
- 5 histogram of measured observations of antenna sets falls outside of a range
- 6 defined by an antenna mask.
- 1 16. The method according to claim 1 wherein the comparing step further
- 2 comprises determining that the subscriber station is most likely operating within
- 3 the authorized area if a first statistical representation of measured observations
- 4 falls within an antenna mask and if a second statistical representation does not
- 5 exceed a maximum outside prominent characteristic of measured observations of
- 6 propagational delays.
- 1 17. The method according to claim 1 wherein the comparing step further
- 2 comprises determining that the subscriber station is operating in the restricted
- 3 area if a first statistical representation of measured propagational delay factors
- 4 falls outside of a range defined by a propagational delay mask or if a second

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- statistical representation of the measured propagational delay factors exceeds a maximum outside prominent characteristic of measured occurrences of propagational delays.
 - 18. A system for monitoring whether a subscriber station is operating in an authorized area, the system comprising:

a monitor for monitoring an operational composite fingerprint for the subscriber station; and

a processor for comparing the operational composite fingerprint to a characteristic composite fingerprint to determine if the subscriber station is operating within the authorized area.

- 1 19. The system according to claim 18 further comprising a storage device for
- 2 storing the characteristic composite fin gerprint for a subscriber station associated
- 3 with operating in the authorized area.
- 1 20. The system according to claim 18 wherein the monitor comprises an antenna
- 2 monitor for monitoring the number of temporally offset receive signals, originating
- 3 from a transmission of the subscriber station, incident upon each distinct uplink
- 4 antenna set of a base station.
- 1 21. The system according to claim 18 where in the monitor comprises a
- 2 propagational delay measurer for measuring the propagational delays of
- 3 temporally offset receive signals originating from a transmission of the subscriber
- 4 station.
- 1 22. The system according to claim 18 wherein the characteristic composite
- 2 fingerprint includes a first histogram of observations of propagational delays
- 3 associated with a reverse link transmission of the subscriber station from the
- 4 authorized area.
- 1 23. The system according to claim 22 wherein the characteristic composite
- 2 fingerprint includes a second histogram of antenna\observations per antenna or

- per antenna set for the reverse link transmission of the subscriber station from the authorized area.
 - 24. The system according to claim 18 wherein the characteristic composite
- fingerprint includes a probability density function of probability versus
- 3 propagational delays associated with a reverse link transmission of the subscriber
- 4 station from the authorized area.
- 1 25. The system according to claim 18 wherein the characteristic composite
- 2 fingerprint includes propagational delay factors based on time difference between
- 3 a reference pseudo-random code and a received pseudo-random code, wherein
- 4 the subscriber station transmits on a reverse channel using the reference pseudo-
- 5 random code.

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